REMARKS

Claims 1 and 3-5 have been examined and have been rejected under 35 U.S.C. § 112, second paragraph, as well as under 35 U.S.C. § 103(a).

I. Rejection under 35 U.S.C. § 112, second paragraph

The Examiner has rejected claims 1 and 3-5 under 35 U.S.C. § 112, second paragraph, as allegedly being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. Accordingly, Applicant has amended the claims in a manner believed to overcome the rejection. Support for the amendments is found in the specification on at least page 9, lines 9-20 and Figures 1-3.

II. Rejection under 35 U.S.C. § 103(a)

The Examiner has rejected claims 1 and 3-5 under 35 U.S.C. § 103(a) as allegedly being obvious over Richard G. Lyons ("Understanding digital signal processing") (hereinafter "Richard") in view of Michael A. Soderstrand ("Design of High-Speed Digital Bandpass Filters Without Multipliers") ("Michael").

A. Claim 1

Applicant submits that claim 1 is patentable over the cited references. For example, claim 1 recites that a sampling pulse for processing digital signal processing is set to a frequency six times as large as a central frequency of a passing frequency band of the second-order

bandpass IIR digital filter. Claim 1 additionally recites that a first-order input feedback coefficient b_1 is set at $-1 + 2^{-n}$, and a second-order input feedback coefficient b_2 is set at $1 - 2^{-(n-1)}$, where n is an odd number of 3 or larger.

The Examiner alleges that Richard in view of Michael discloses the claimed invention. However, Richard fails to teach or suggest that a sampling pulse for processing digital signal processing is set to a frequency six times as large as a central frequency of a passing frequency band of the second-order bandpass IIR digital filter. The Examiner has also admitted on page 3 of the Office Action that Richard "fails to disclose a sampling frequency is-set to six times as large as a central frequency of a passing frequency band."

Although Richard discloses in equation (6-22) an output Y(z) in the z-domain of an IIR filter as shown in Figure 6-18, as well as equation (6-25) of a general IIR filter's z-domain transfer function, Richard has not specified values or constraints for the a(k) and b(k) coefficients. Having no specific values or constraints specified in Richard does not lend to a teaching or suggestion that Richard's coefficients a(k) and b(k) may be set to values as recited in the claimed invention.

Claim 1 recites "a first-order input feedback coefficient b_1 set at $-1 + 2^{-n}$" and "a second-order input feedback coefficient b_2 set at $1 - 2^{-(n-1)}$, where n is an odd number of 3 or larger." Claim 1 also recites "a zero-order output coefficient a_0 is set at 2^{-n} ($a_0 = 2^{-n}$) and a coefficient a_2 of a second-order output is set at -2^{-n} ($a_2 = -2^{-n}$)." These coefficients are specifically recited in claim 1 to be certain values. In particular, no specific values are provided for any of the variables in Richard, and the mere presence of general variables does not anticipate or even

suggest the specific formulas as recited in the claims. Further, even if Applicant assumes *arguendo* that the weighting factors a(k) and b(k) in Richard relate to the claimed coefficients, the reference still fails to teach or suggest that n equals an odd number of 3 or larger, as recited in claim 1.

Michael does not remedy the deficiencies of Richard. The Examiner relies on Michael's Abstract for the teaching that the sampling frequency is set to six times as large as a central frequency of a passing frequency band. However, Michael fails to mention or suggest any particular relationship between values of the sampling frequency and the center frequency. Although Michael discloses a special case of N=6, this value only designates a number of states that refers to a 6^{th} order FIR filter. Michael therefore does not teach or suggest a second-order bandpass IIR digital filter, as recited in the claim. Michael solely suggests that further stages can refine the center frequency to any multiple of $2\pi/(6^n)$ where n is the number of stages, and that adjustment of the sampling frequency can place the FIR bandpass filter at any desired center frequency (Abstract). Further, there is also no teaching or suggestion in Michael of specific coefficients with values as recited in claim 1. At least by virtue of the aforementioned reasons, Applicant submits that claim 1 is patentable over Richard in view of Michael.

B. Claim 3

Since claim 3 contains features that are analogous to the features recited in claim 1, Applicant submits that claim 3 is patentable for at least the analogous reasons as set forth above. Additionally, Applicant notes that neither structure in Richard's Figure 6-21 is capable of subtracting a second-order output from the zero-order output, and multiplying the subtraction

result by 2^{-n}, nor is such a capability mentioned or suggested in Richard. At least by virtue of this additional difference as well as for the aforementioned reasons, claim 3 is patentable over Richard in view of Michael.

C. Claims 4 and 5

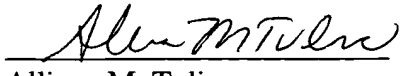
Since claims 4 and 5 contain features that are analogous to the features recited in claim 1, Applicant submits that claims 4 and 5 are patentable for at least analogous reasons as set forth above.

III. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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